

# Nematode Parasites of Brazilian Corvid Birds (Passeriformes): A General Survey with a Description of *Viktorocara brasiliensis* n. sp. (Acuariidae, Schistorophinae)

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*This report deals with the identification of 139 samples of nematodes recovered from Brazilian jays. Viktorocara brasiliensis n. sp. is proposed and compared with V. capillaris, V. limosae, V. charadrii and V. garridoi which are the other species included in the genus. The differentiation of V. brasiliensis n. sp. was based on the ratios between muscular and glandular esophagus and spicules, as well.*

*Other referred species are Acuaria mamillaris, A. majori, Aprocta sp., Cheilospirura sp., Diplotriaena americana, D. bargusinica, Oxyspirura matogrosensis, Oxyspirura sp., Pelecitus helycinus, Procyrnea sp., Skrjabinura spiralis, Subulura papillosa, Synhimantus sp. and Tetrameres (Microtetrameres) sp., with the establishment of some new host records.*

Key words: nematodes - *Viktorocara brasiliensis* n. sp. - Corvidae - birds - Brazil

The scope of the present investigation is related to avian nematodes parasitizing Brazilian birds, proceeding with previous reports on the subject (Pinto et al. 1991, 1993, 1994, 1996, Pinto & Vicente 1995, Vicente et al. 1993, 1995, 1996). The results so far obtained during this study, mainly refer to the proposal of *Viktorocara brasiliensis* n. sp. and the survey of other species recovered from corvid hosts.

In Brazil, the Corvidae are represented only by the genus *Cyanocorax* Boie, 1826, with eight species, commonly named jays, of which two, occur exclusively along the Venezuelan border. These birds have strong beaks, adapted to an omnivorous feeding. All of them present a crest-like ornamentation on their heads and body with bright colored feathers in a mixture of black, blue and white (Frisch 1981).

## MATERIALS AND METHODS

One hundred and thirty-nine samples of nematodes recovered between 1921 and 1955 during scientific expeditions to the Brazilian Central and Southeastern regions and deposited in the Helminthological Collection of the Oswaldo Cruz

Institute (CHIOC), were studied. The source of the samples according to host species is: 3 from *Cyanocorax* sp.; 77 from *C. chrysops* (Vieillot, 1818); 4 from *C. cristatellus* (Temmink, 1823); 55 from *C. cyanomellas* (Vieillot, 1818). Nematodes were preserved in Railliet & Henry solution (0.85% NaCl solution: 93 ml; formaldehyde: 5 ml; glacial acetic acid: 2 ml) and were processed for study as described elsewhere (Pinto et al. 1993). The preparation of *en face* mounts was made according to the method of Anderson (1958). Illustrations were made with a drawing tube connected to an Olympus light microscope. Measurements are in micrometers unless otherwise indicated. Means are in parentheses. Classification of the nematodes regarding to generic and subgeneric diagnosis follow Anderson and Bain (1976) and Chabaud (1975a, b, 1978). Specific diagnosis was achieved by comparison of morphometric data presently obtained with those referred in the original descriptions and/or redescrptions, as well as with deposited type specimens whenever available in the CHIOC. Taxonomy and common names of hosts were based on Pinto (1944), Frisch (1981) and Sick (1984). NHR indicates new host record.

## RESULTS

*Viktorocara brasiliensis* n. sp.  
(Figs a-f)

Description and measurements: based on eight adult specimens, four males and four females. Acuarioidea, Acuariae, Schistorophinae.

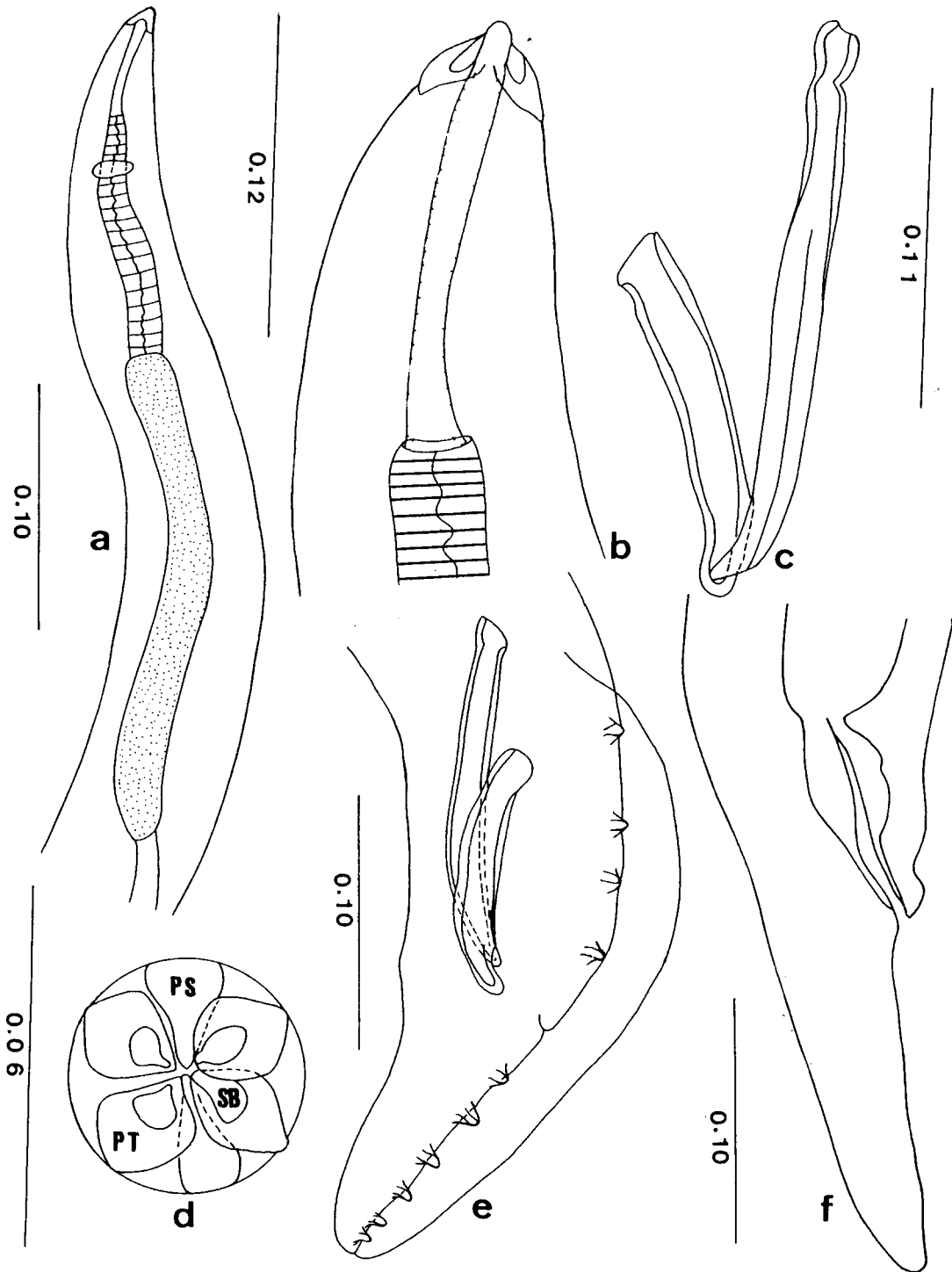
Males (Figs a-c, e): body 4.55-6.02 (5.22) mm long, 150-220 (181) wide. Oral opening laterally

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*Viktorocara brasiliensis* n. sp. – a: anterior portion of male, lateral view. b: anterior extremity of male, lateral view. c: spicules, frontal view. d: mouth of female, *en face* view (PS-pseudolabium, SB-sublabium, PT-ptilinum). e: posterior portion of male, lateral view. f: posterior portion of female, lateral view. Bars in mm.

compressed. Pseudolabia well developed with apices continuous with anterolateral walls of buccal cavity. Four sublabia, pear-shaped located on subdorsal and subventral sides of oral opening. Four winglike membranes or ptilina, 21-25 (23) long with sharp, pointed tips arising from dorsoventral sides of oral opening, surrounding sublabia and terminating at base of pseudolabia (Fig. d). Buccal capsule expanded anteriorly, lined with thick transversely striated cuticle, 100-160 (130) long. Muscular and glandular esophagus 300-390 (350) and 570-750 (660), respectively. Nerve ring 160-200 (180) from anterior extremity. Excretory pore not observed. Spicules stout, similar in shape, unequal in size, left 190-220 (201) and right 140 long. Gubernaculum absent. Ten pairs of caudal papillae; four pairs are pre-, six pairs postcloacal. Cloacal aperture 150-190 (170) from posterior extremity.

Females (Figs d, f): body 10.88-17.22 (14.02) mm long, 150-230 (180) wide. Oral opening and buccal complex as described for males. Ptilina 25-28 (27) long. Buccal capsule identical to that of males, 100-160 (130) long. Muscular and glandular esophagus 430-680 (555) and 0.90-1.06 (0.97) mm long, respectively. Nerve ring 210-250 (230) from anterior extremity. Excretory pore not observed. Vulvar aperture 6.28-8.54 (7.24) mm from anterior end. Amphidelphic. Uteri may be packed with embryonated, thick-shelled eggs 16-23 (19) long, 18-21 (19) wide. Rectum 93-130 (105) long. Anus 160-230 (195) from posterior extremity.

Taxonomic summary

Type host: *Cyanocorax chrysops* (Vieillot, 1818); common name: plush-crested jay ("gralha"). Other host: *Cyanocorax cyanomellus* (Vieillot, 1818); common name: purplish jay ("gralha")

Site of infection: under the gizzard lining

Type locality: Salobra, State of Mato Grosso do Sul, Brazil

Other localities: Bodoquena, State of Mato Grosso do Sul, Ilha Seca, State of São Paulo, Brazil

Etymology: the specific name derives from the

country in which the specimens were collected. Specimens studied: CHIOC no. 33,641a (holotype), 33,641b (alotype), 33,641b-d, 33,642a-d (paratypes) (whole mounts), 11,324, 11,325, 11,328, 11,538, 11,629, 11,632, 11,644, 11,646, 11,651, 11,656, 11,661-11,664, 11,667, 11,671, 11,691, 11,719, 11,738, 12,605, 12,944, 13,000, 13,116, 13,119, 13,124, 13,125, 13,133, 13,138, 13, 144, 13,146, 13,148, 13,154, 13,159, 13,179, 15,026, 15,029, 20,480 (vouchers) (wet material). Remarks: the genus *Viktorocara* Guschanskaya, 1950 has recently been referred (Vicente et al. 1995) in South America on the basis of a single female specimen designed as *Viktorocara* sp., parasitizing an Ardeidae host, the whistling heron, *Syrigma sibilatrix* (Temminck).

The genus has been previously reported from Charadriidae, Corvidae, Icteridae and Scolopacidae hosts (Barus & Garrido 1968, Vicente et al. 1995).

Presently, four diagnosed species are included in the genus, namely *V. capillaris* (Molin, 1860) Wong & Lankester, 1984, *V. charadrii* Belopolskaya, 1953, *V. limosae* Daya, 1966 and *V. garridoi* Barus, 1968, according to Wong and Lankester (1984).

*V. brasiliensis* n. sp. is proposed herein, and compared with the above referred species, taking into account reliable morphological characters, regarding its differentiation. The so far considered parameters are mainly related to the ratios between glandular and muscular esophagus and spicules (Table I).

Moreover, *V. brasiliensis* n. sp., with similar spicules, can be promptly distinguished from *V. capillaris*, *V. garridoi* and *V. limosae*, regarding this character; these species also present different number and distribution pattern of caudal papillae when compared to the new species.

Besides, the length of the left spicule in *V. charadrii* and *V. limosae* varies from 400-500 and more than 500, respectively, compared to 190-220 in *V. brasiliensis* n. sp.

TABLE I  
Comparative data on *Viktorocara* spp.

Species	Ratio between glandular and muscular esophagus	Ratio between left and right spicules	Host family
<i>V. capillaris</i>	1:0.2	1:0.5 <sup>a</sup>	Charadriidae
<i>V. charadrii</i>	1:0.3	1:0.2	Charadriidae
<i>V. garridoi</i>	1:1.0	1:0.3 <sup>a</sup>	Icteridae, Corvidae
<i>V. limosae</i>	1:0.3	1:0.1	Scolopacidae
<i>V. brasiliensis</i> n. sp.	1:0.5	1:0.6	Corvidae

a: left spicule with finger-like processes present near of distal end.

## Acuarioidea, Acuariidae, Acuariinae

*Acuaria mayori* Lent, Freitas & Proença, 1945

## Taxonomic summary

Host: *Cyanocorax cyanomellas* – NHR

Site of infection: gizzard

Locality: Salobra, State of Mato Grosso do Sul, Brazil

Specimens studied: CHIOC no. 11,556 (wet material).

Remarks: *Acuaria mayori* was also referred in a Fringilidae host in Brazil and data presently obtained agree with those previously reported (Pinto et al. 1993).

## Thelazioidea, Thelaziidae, Oxyspirurinae

*Oxyspirura matogrosensis* Rodrigues, 1963

## Taxonomic summary

Hosts: *Cyanocorax chrysops* – NHR, *C. cyanomellas*

Site of infection: eyes

Localities: Barranco Alto and Salobra, State of Mato Grosso do Sul, Ilha Seca, State of São Paulo, Brazil

Specimens studied: CHIOC no. 33,643; 11,311, 11,317, 11,326, 11,327, 11,329, 11,331, 11,336, 11,347, 11,355, 11,595, 11,597, 11,609, 11,637, 11,641, 11,650, 11,665, 11,668, 11,716, 11,762, 12,525, 12,974, 13,136, 13,143, 13,145, 15,025, 15,508, 20,479 (wet material).

Remarks: Rodrigues (1963), described *O. matogrosensis* from the eyes of the Corvidae *Cyanocorax cyanomellas*, also captured in the State of Mato Grosso do Sul between 1940-1955. Although named after the State of Mato Grosso, the specific name is spelled with a single “s” as originally proposed.

## Seuratoidea, Seuratidae, Seuratinae

*Skrjabinura spiralis* Gnédina, 1933

## Taxonomic summary

Hosts: *Cyanocorax* sp., *C. chrysops* – NHR, *C. cristatellus* (Temminck, 1823); common name: Curl-crested jay (“pega, gralha do campo, gralha do peito branco”) – NHR

Localities: Ilha Seca, State of São Paulo, Bodoquena and Salobra, State of Mato Grosso do Sul, Lassance, State of Minas Gerais, Brazil

Specimens studied: CHIOC no. 2,476, 4,278, 4,280, 4,281, 11,309, 11,342, 11,349, 11,516, 11,537, 11,550, 11,551, 11,557-11,559, 11,573, 11,602, 11,630, 11,643, 11,645, 11,652, 11,669, 11,698, 11,699, 11,720, 11,725, 11,726, 12,542, 12,527, 12,560, 12,611, 12,993, 12,997, 12,999, 13,130, 13,547, 15,018, 15,019, 15,023, 15,027,

15,030 (wet material).

Remarks: this is a very common species, occurring in Brazilian Cuculiformes, Falconiformes and Piciformes hosts (Pinto et al. 1994, 1996).

## Diplotriaenoidea, Diplotriaenidae,

## Diplotriaeninae

*Diplotriaena americana* Walton, 1927

## Taxonomic summary

Hosts: *Cyanocorax chrysops*, *C. cyanomellas*

Site of infection: body cavity

Localities: Ilha Seca, State of São Paulo, Bodoquena and Salobra, State of Mato Grosso do Sul, Brazil

Specimens studied: CHIOC no. 11,350, 11,535, 11,552, 11,548, 11,794, 12,731, 13,199, 13,207 (wet material).

Remarks: *Diplotriaena americana* has been reported in the same hosts investigated herein (Vicente et al. 1983).*D. bargusinica* Skrjabin, 1917

## Taxonomic summary

Hosts: *Cyanocorax cyanomellas* – NHR

Site of infection: body cavity

Localities: Salobra, State of Mato Grosso do Sul, Brazil

Specimens studied: CHIOC no. 12,951 (wet material).

Remarks: *Diplotriaena bargusinica* has been illustrated and referred for the first time in Brazil by Vicente et al. (1983), occurring in Icteridae and Fringilidae hosts. This is the first report of the species in a Corvidae bird.

## Filarioidea, Onchocercidae, Dirofilarinae

*Pelecitus helycinus* (Molin, 1860) Railliet & Henry, 1910

## Taxonomic summary

Hosts: *Cyanocorax cyanomellas*

Site of infection: among tendons of feet

Localities: Salobra, State of Mato Grosso do Sul, Brazil

Specimens studied: CHIOC no. 11,515, 12,606 (wet material).

Remarks: the filarioid species parasitizes a wide range of avian hosts and has been already reported from *C. cyanomellas* in Brazil (Bartlett & Greiner 1986).

Specimens that could not be specifically identified due to their poor state of preservation, are designed as follows:

Thelazioidea, Thelaziidae, Oxyspirurinae  
*Oxyspirura* sp.

Taxonomic summary

Hosts: *Cyanocorax chrysops*  
Site of infection: eyes  
Localities: Ilha Seca, State of São Paulo, Barranco Alto, State of Mato Grosso do Sul, Brazil  
Specimens studied: CHIOC no. 11,763, 15,593 (wet material).

Habronematoidea, Habronematidae,  
Habronematinae  
*Procyrnea* sp.

Taxonomic summary

Hosts: *Cyanocorax chrysops*, *C. cyanomellas*  
Site of infection: gizzard  
Localities: Bodoquena and Salobra, State of Mato Grosso do Sul, Brazil  
Specimens studied: CHIOC no. 2,475, 11,549, 13,188, 20,481, 20,482, 20,648 (wet material).

Acuarioidea, Acuariidae, Acuariinae  
*Synhimantus* sp.

Taxonomic summary

Hosts: *Cyanocorax chrysops*  
Site of infection: gizzard  
Localities: Salobra, State of Mato Grosso do Sul, Brazil  
Specimens studied: CHIOC no. 11,308, 11,598, 11,649, 11,718, 20,126 (wet material).

Aproctoidea, Aproctidae, Aproctinae  
*Aprocta* sp.

Taxonomic summary

Hosts: *Cyanocorax* sp., *C. cristatellus*, *C. cyanomellas*  
Site of infection: body cavity  
Localities: Lassance, State of Minas Gerais, Salobra, State of Mato Grosso do Sul, Brazil  
Specimens studied: CHIOC no. 2,493, 11,727, 13,551 (wet material).

Other nematode species reported from Corvidae in Brazil and not found during the present study: *Acuaria mamillaris* (Molin, 1860) Railliet & Sisoff, 1912 and *Subulura papillosa* Molin, 1860 in *Cyanocorax cayanus* (L., 1766); common name: blue jay ("gralha azul"); *Cheilospirura* sp. in *C. cristatellus*, according to Vicente et al. (1995) (Table II).

TABLE II

Nematodes from corvid birds in Brazil

Parasite species	Host species
<i>Acuaria mamillaris</i> <sup>a</sup>	<i>Cyanocorax cayanus</i>
<i>A. mayori</i>	<i>C. cyanomellas</i>
<i>Aprocta</i> sp.	<i>Cyanocorax</i> sp.
	<i>C. cristatellus</i>
	<i>C. cyanomellas</i>
<i>Cheilospirura</i> sp. <sup>a</sup>	<i>C. cristatellus</i>
<i>Diplotriaena americana</i>	<i>C. chrysops</i>
	<i>C. cyanomellas</i>
<i>D. bargusinica</i>	<i>C. cyanomellas</i>
<i>Oxyspirura matogrosensis</i>	<i>C. chrysops</i>
	<i>C. cyanomellas</i>
<i>Oxyspirura</i> sp.	<i>C. chrysops</i>
<i>Pelecitus helycinus</i>	<i>C. cyanomellas</i>
<i>Procyrnea</i> sp.	<i>C. chrysops</i>
	<i>C. cyanomellas</i>
<i>Skrjabinura spiralis</i>	<i>Cyanocorax</i> sp.
	<i>C. chrysops</i>
	<i>C. cristatellus</i>
<i>Subulura papillosa</i> <sup>a</sup>	<i>C. cayanus</i>
<i>Synhimantus</i> sp.	<i>C. chrysops</i>
<i>Tetrameres (Microtetrameres)</i> sp.	<i>Cyanocorax</i> sp.
	<i>C. chrysops</i>
	<i>C. cyanomellas</i>
<i>Viktorocara brasiliensis</i> n. sp.	<i>C. chrysops</i>
	<i>C. cyanomellas</i>

a: not found during the present study. Data after Vicente et al. (1995).

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